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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/795,914	03/08/2004	Jaehoon Heo	TI-36083	1813

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EXAMINER
JEAN PIERRE, PEGUY

ART UNIT	PAPER NUMBER
2819	

DATE MAILED: 12/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
	10/795,914	HEO, JAEHOON
Office Action Summary	Examiner	Art Unit	
	Peguy JeanPierre	2819	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 March 2004*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on *26 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All b)☐ Some * c)☐ None of:

     1.☐ Certified copies of the priority documents have been received.

     2.☐ Certified copies of the priority documents have been received in Application No. _____.

     3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1.   Claims 1-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is confusing. In line 5, the claim recites "adding the result to a sum". It is not clear where the sum originates or how it is created; if a sum was previously or initially set in the accumulator or part of a previous conversion process. Please explain.

The claim also recites "providing the sum as a first multiple bit value of **a second signal**" in line 11, the claim recites "converting to a second multiple bit value of **the second signal**". It is not clear whether the aforementioned second signals are related. The signals originate from two different sources namely a first multiple bit value and a second multiple bit value. In addition, the recitation seems to suggest that the second signal is inputted into another lookup table to be further process and generate a second multiple bit value. Please clarify.

Further, since the first signal that contains a plurality of bits is the input of the converter; it is assumed that a second signal is also an input to the converter and comprises a second plurality of bits. Please clarify.

The same confusion appears in claims 7, 11, 22, 24.

In claims 5 and 9, line 3, the term "the number of bits ..." lacks antecedent basis;

In claims 6 and 10, line 4, the term "the value of the ..." lacks antecedent basis;

In claims 12 and 19, the term "the address of a section" lacks antecedent basis; the

term " the value of the subset" lacks antecedent basis;

Claim 25, line 3 at page 13, the term "the sequence..." lacks antecedent basis;

In claim 29, line 2, the term " the value of ..."lacks antecedent basis.

The claims as understood by the Examiner is method for conversion of signals in which

bits data having a particular size are stored into an address generator to be later

process into a look up table and an accumulator to generate a PCM signal.

An art rejection of the claims as understood by the Examiner appears below.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 1-4, 7-8, 11, 14-18, 22-24, and 30-31 are rejected under 35 U.S.C. 103(a)

as being unpatentable over Lim et al. (US 2002/0075953) in view of Le Ngoc et al. (US

5,175,819).

Lim et al. disclose in Figure 3, a method for conversion of signals that comprises a

plurality of look up tables (300-600) whose outputs are connected to the inputs of a

plurality of accumulators (700-1000). The lookup tables receive inputs form a shift

register (100) via an address register (200) and sequentially output the data. The shift

register (100) comprises a selector that selects subset of bits of equal size (see

paragraph 43) to be inputted and stored into the address register. The address (200)

generating address to a lookup table group corresponding to each of a plurality of filter

coefficients groups in response to the input (subset) data selected (see paragraph 13).

The input data (direct stream digital) is converted to PCM signal (see paragraph 3). The

accumulators include an adder to add the data to the already added/stored data to form

a partial sum and inherently output a signal after the last data being added, a register to

store the data, and accumulate the results outputted by each coefficient group (see

paragraph 20) to generate at an output a multiple-bit second signal (see Fig. 8,

paragraph 64) inherently after adding the last subset of bits. Lim et al. teach a shift

register instead of a first-in-first-out register (FIFO) to receive the direct stream digital

data.

Le Ngoc et al. disclose that FIFO buffer functions as a shift register (see col. 1 lines 14-

15) because FIFO device usually comprises shift registers serially connected.

Therefore, any artisan having working knowledge in the art would have been motivated

to replace the shift register of Lim et al. by the FIFO buffer as taught by Le Ngoc they

can be interchangeably used and configured to store data elements and output them in

an orderly manner.

Lim et al. do not also explicitly teach the conversion of a second plurality of bits from the

fist signal to a second multi bit value. It is well known in the art that for the conversion of

signals to be completed the algorithm used to convert the signals must be repeated until

all the bits that need to be converted have been processed.

Lim et al. do not teach that the look up table is contained in a memory located on a digital signal processor or contained in an external memory coupled to a digital processor. It is to be noted that the look up table is itself a memory for its ability to store, read, and write digital data to an address. Hence, the memory can be distributed, external, or local, on-chip, remote and can be implemented and/or transmitted by any known or developed medium that can store information suitable for later use. Therefore, any artisan having working knowledge in the art would have been motivated to build a local or external memory system based on system requirements and the environment the memory is to be used.

Allowable Subject Matter

4.   Claims 5-6, 9-10, 12-13, 19-21, 25-29, and 32   would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

5.   The following is an examiner's statement of reasons for allowance: The prior art of record does not teach a table that comprises a two dimensional array having the different size, the size of the first array comprises a number of bits in a plurality of bits divided by the number of bits in a subset of the plurality of bits, the size of the second dimension is equal to $2^{(\text{number of bits in subset})}$; the prior art does not also teach an address generator that provides to a look up table the address of a section in the look up table that corresponds to a plurality of words; each of the section includes a plurality of results for each word and a value of the word selects one of the plurality of results.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kwak et al. (USP 6,166,781) discloses a mehtod of conversion of signals.

7.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peguy JeanPierre whose telephone number is (571) 272-1803. The examiner fax phone number is (571) 273-1803.

Peguy JeanPierre
Primary Examiner